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(54) Insulated Bags

(57) An insulated bag is formed of two major walls of plastic material and has a carrying handle 15, at least one wall

comprising two layers 10, 11, which provide insulation by virtue of air which is trapped between said layers by surface irregularities on one of the layers or by one layer being of a foamed material. The carrying handle may alternatively be formed by part or all of the outer layer of the two-layer wall.

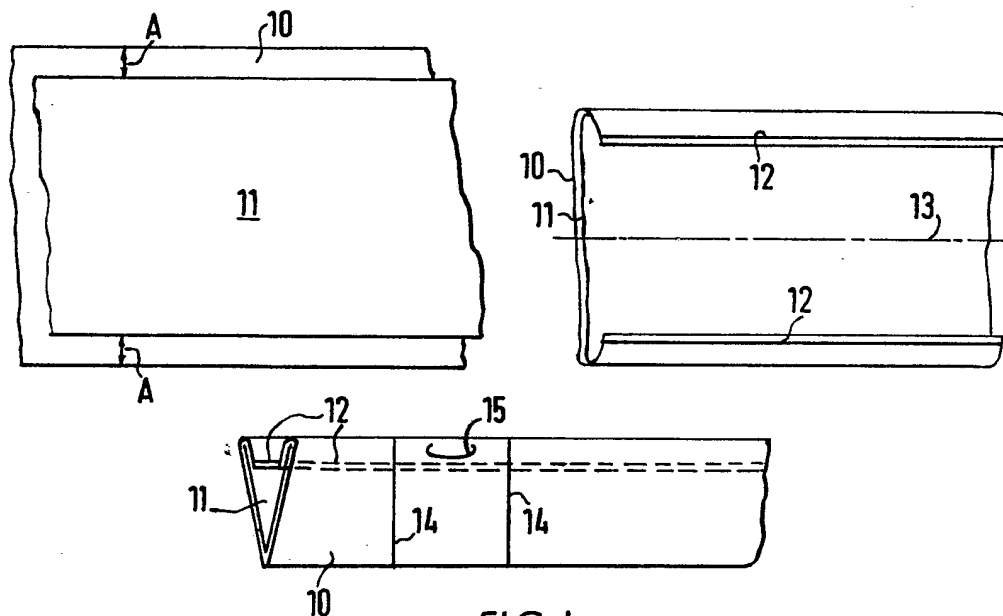


FIG. 1.

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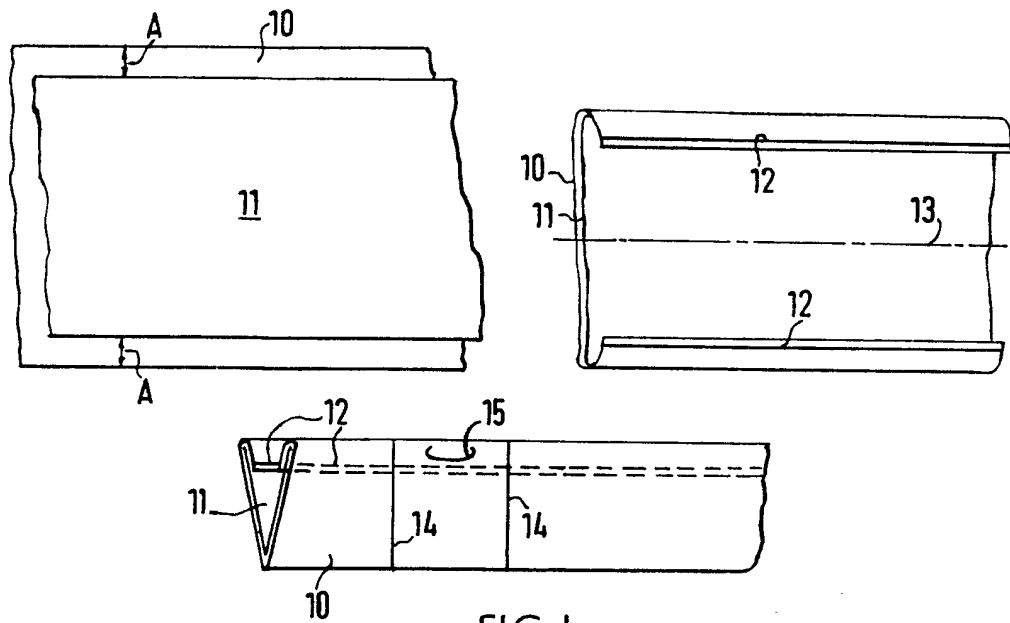


FIG. 1.

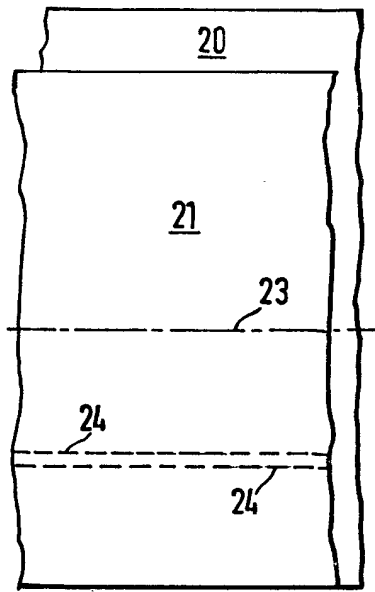


FIG. 2a.

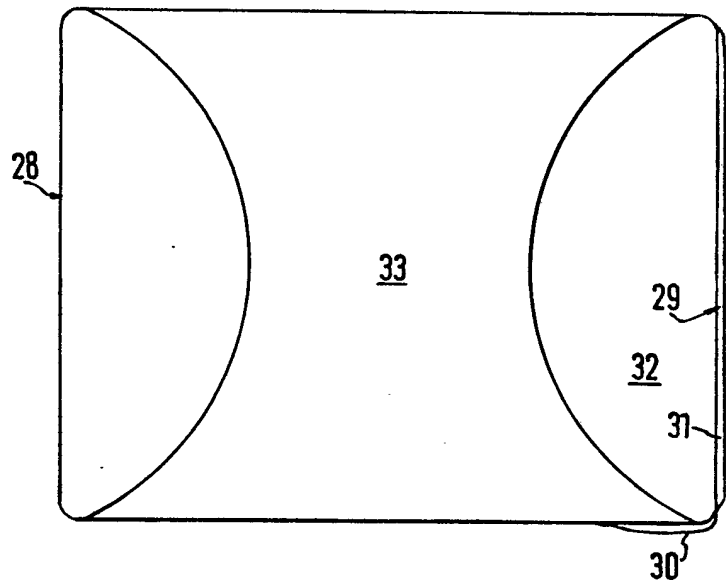


FIG. 3.

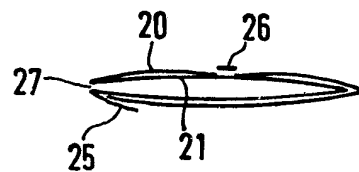


FIG. 2b.

SPECIFICATION

Insulated Bags

The present invention relates to insulated bags, and more particularly, but not exclusively, to double-walled insulated bags.

In accordance with the present invention there is provided an insulated bag formed of two major walls of plastics material and carrying handle, one or both major walls of the bag being an insulating wall and having a second, outer layer, the insulating wall and/or the second layer being provided with an irregular surface to provide insulation.

The provision of an insulating wall and/or second layer with an irregular surface results in air being trapped, and thus gives the desired insulating properties. Both major walls can be insulating walls provided with second layers, but this is not essential. The surface irregularities can be obtained by using a corrugated, overprinted, or embossed film, but more usually the insulating wall and/or second layer has random irregularities such as may be obtained for example by using a foamed polyethylene.

The preferred foamed polyethylene film is a foamed high density polyethylene which is from 5 μ to 5 mm thick. The physical properties of the polyethylene film may be selected as appropriate; the film can have an apparent density of 90 to 2% of the density of the unfoamed film and can contain some filler, suitably up to 25% filler.

When the insulating wall has an irregular surface the associated second layer can also be of a plastics film with an irregular surface, but preferably it is of conventionally smooth transparent plastics film. Suitably such a smooth film, whether transparent or not, is up to 300 μ thick. The use of a transparent outer layer is particularly appropriate when the irregular surface is formed by printed matter. Multi-layered, expanding foaming or other inks can be used to print on the insulating wall or more preferably, on the inside face of the transparent outer layer and simultaneously cause the desired surface irregularities.

The bags of the present invention which have both major walls as insulating walls will typically be manufactured by superimposing on a plastics sheet a sheet of the film provided with an irregular surface and which is to form the inner wall. Usually the bags will be made on a continuous basis and preferably in side-by-side relationship. By using in a continuous side-by-side process sheets which are at least twice as wide as the intended depth of the bag, the superimposed sheets can be folded along their common longitudinal centre line and welded as required to give double-walled bags. The welding will be transverse of the sheets, corresponding to the edges at the sides of the bags, and usually also along the unfolded side of the sheets to join together the walls of each double wall, i.e. at the mouth of each bag.

If desired and by using sheets which are more

than twice as wide as the bag depth, a gusset for the bottom of the bag may be formed during the folding and welding operations of side-by-side continuous manufacture. Furthermore, by superimposing a further plastics sheet on the other sheets before folding and welding, it is possible to manufacture a bag with an inner liner such that the wall with an irregular surface is sandwiched between two layers of plastics film. Other variations are possible e.g. continuous head-to-tail manufacture or the use of the irregularly surfaced film to form the outer layer or both the outer layer and insulation wall.

When manufacturing the present bags by the operations of folding and welding, the handle is conveniently formed or incorporated during such operations. The carrying handle can take various forms, and for example may be a rigid handle attached at the opening of the bag. As an alternative, it may be a cut-out-handle formed by cutting the bag adjacent the opening so that the users' fingers may be looped through the bag. For a rigid handle, and assuming continuous side-by-side manufacture, two opposed parts for each handle may be welded at the open side of the sheets (and thus at the edges at the opening of the bag) during the described folding/welding operations. The two parts may extend the full length of the opening to give rigidity to the bag, and may have cooperating projections and recesses so that the two parts may be fastened together to close the opening.

The bags so far discussed will normally be intended as carrier bags e.g. for carrying shopping.

In a further embodiment of the present invention there is provided a bag for use in carrying generally flat items of such as a hot pizza pie. The bag may have a captive flap opening and a handle on a first major wall (the upper wall when the bag is in use) which wall is an insulation wall with second layer. In a preferred embodiment the second layer is a strap extending across the insulation wall and forming the carrying handle. Provided that the strap covers a substantial area of the insulation wall, and provided that one or both of the strap or insulation wall is provided with surface irregularities, then the required degree of insulation can be obtained.

If desired the second major wall can also be an insulation wall and have a second layer: if both the major walls are of double-walled construction then manufacture is in principle more simple.

For a captive flap, the two major walls are joined along three edges of the bag. The remaining edge of one of the walls has a flap which extends away from the opening of the bag and is secured along its sides to the bag. Inversion of the flap of the one major wall over the opening of the bag then results in the remaining edge of the other wall being entrapped within the inverted flap, thereby closing the bag.

In practice it is found that a captive flap is usually inverted from a position beneath the opening and it is therefore preferred that the flap

is of folded-back material on the second or lower major wall of the bag.

If desired, the flap can alternatively be on the first or upper major wall of the bag, in which case it is much preferred that the handle is a slit handle and flap is formed by the part of the outer wall that lies between the handle and the opening.

As mentioned, other forms of handle are possible for the flat carrying bag, but in one embodiment a slit handle parallel to the mouth of the bag is formed in a double-walled bag, i.e. a bag in which the outer layer gives a double-wall construction. The slit handle can extend across the middle of the bag and be formed by two parallel cuts in the outer layer of the bag. Only the outer layer is cut, and a captive flap can be formed of that part of the outer layer lying between the handle and the opening. As an alternative, parallel welds adjacent the handle can seal the outer layer to the insulation wall.

Four Examples of the present invention will now be described by way of illustration and with reference to the accompanying drawings, in which:

Figure 1 illustrates stages in the process employed in Example 2;

Figure 2 illustrates the process employed in Example 3;

Figure 3 illustrates the bag manufactured in Example 4.

Example 1

A double-walled insulated bag with a rigid carrying handle is made by a continuous side-by-side process using a transparent polyethylene film for the outer layer and for the inner insulation wall foamed polyethylene film which is commercially available under the Trade Mark "Therma-Wrap" and which is an irregularly surfaced material made from high density polyethylene. The techniques for continuous production of bags by folding and welding of plastics film are well known and the following description concentrates on those aspects which are particularly germane to the design of bag embodying the invention. Moreover, for ease of description the manufacture of a single bag is considered; the various operations are serially repeated for the continuous production process.

One side of the transparent film is printed with advertising or other matter. For preference it is arranged that the printing is on that side of the film which is on the inside of the finished bag; the printed matter is then viewed from the outside but is protected by the transparent film.

The printed transparent film and the corresponding length of foamed polyethylene film are superimposed and folded along their common longitudinal centre line. If desired, the folding operation can include the formation of a gusset by additional reverse folds adjacent to the centre line fold.

A two-part rigid handle is positioned at the open side of the films in the intended opening of the bag and the films are welded to one another

and to the handle to give the finished bag; welds transversely of the films along the two sides of the bag weld together the four edges comprising the edges of the inner and outer walls of the two major walls of the bag, while welds at the top of the bag i.e. open side of the films weld the inner and outer walls of each major wall to a respective part of the two parthandle.

The resultant bag is a carrier bag with a double-walled construction which results in air being trapped between the inner and outer walls. Air is a good insulating material and as such the bag is an insulated bag.

In a variation, the foamed film is replaced by a smooth-surfaced film. The surface irregularities are then provided by using an ink to build up the printed areas.

Example 2

A bag with a cutout handle is manufactured from the same transparent and foamed plastics materials as employed in Example 1. A continuous side-by-side process is again employed. The process is described with reference to Figure 1 which schematically illustrates successive steps of the process.

In this instance the outer, transparent film is wider than the inner, foamed film and the inner film is centred on the outer film such that the outer film as positioned on the outside and the outer film as folded back to within the bag.

The bag so obtained has good heat-insulating properties.

Example 3

A pizza pie bag is manufactured using a side-by-side process as in Examples 1 and 2. In this instance the outer film projects to one side only of the inner film, as shown in Figures 2a of the drawings. Longitudinal folds are made to fold back and under the projecting outer film to give ultimately the captive flap, and to fold the films along the longitudinal centre line of the inner film. Longitudinal cuts as indicated by the dotted lines of the unfolded film shown in Figure 2a are made along the centre of the upper surface of the outer film to give a slit handle, and parallel longitudinal welds adjacent the handle are made to seal the outer wall to the inner wall. Transverse welds are made along the sides of the bag and to secure the folded-back flap to the bag. The resultant bag, shown in section in Figure 2b has both its major walls of the double-wall construction, a captive flap at its opening for inversion upwardly to close the bag, and a carrying handle across its mid-part.

In use a hot pizza pie (or other article) can be inserted in to the bag and the captive flap inverted to enclose the pizza pie and keep it warm. The slit handle permits the filled bag to be carried in a generally horizontal manner.

Example 4

A further pizza pie bag of the invention is shown in Figure 3. The bag has an opening

with a captive flap 30, generally similar to the flap 25 of the bag of Example 3. In this instance the two major walls 31, 32 are of foamed polyethylene, with the upper major wall 32 acting
5 as the insulation wall. To provide the insulation effect a strap 33 extends across the wall 32 is welded at the sides of the bag to the wall 32. The strap 33 forms the second layer associated with the insulation wall and covers a substantial area
10 of the wall 32.

In use, the strap 33 also acts as a carrying handle for the bag, since the user's fingers can be looped through between the strap and the wall 32.

15 Claims

1. An insulated bag formed of two major walls of plastics material and a carrying handle, at least one of said major walls being an insulating wall and having a second, outer layer and at least one
20 of said insulating wall and said second layer being provided with an irregular surface to provide insulation.

2. A bag as claimed in Claim 1, wherein said irregular surface is obtained by using a
25 corrugated, overprinted or embossed film, or by using a film with random irregularities.

3. A bag as claimed in Claim 2, wherein said insulation wall is of foamed polyethylene.

4. A bag as claimed in Claim 2, wherein said
30 second layer is of transparent film.

5. A bag as claimed in Claim 1, in the form of a carrier bag, both said major walls being of foamed polyethylene and having a said second, outer layer of transparent film.

6. A bag as claimed in Claim 6, wherein said
35 handle is a rigid handle or a cut-out handle.

7. A bag as claimed in Claim 2, wherein said bag has a captive flap opening.

8. A bag as claimed in Claim 2, wherein said
40 second layer provides said handle.

9. A bag as claimed in Claim 1, in the form of a bag for carrying generally flat items of food, an upper major wall of said bag being an insulation wall and its associated second layer being slit to
45 provide a carrying handle.

10. A bag as claimed in Claim 1, in the form of a bag for carrying generally flat items of food, an upper major wall of said bag being an insulation wall and its associated second layer being a strap
50 extending across said insulation wall to cover a substantial area of said wall and to provide said carrying handle.